

DESCRIPTION OF NEW SPECIES OF FOSSILS FROM PALEOZOIC ROCKS
OF IOWA.

BY CHARLES A. WHITE, M.D.

RADIATA.
ACTINOZOA.Genus **CHÆTETES**, Fischer.**Chætetes Muscatinensis** (n. s.).

Polypary not usually large or massive, but generally encrusting some object, upon which it attains considerable thickness by concentric layers; cells exceedingly slender, but under a good lens they show their numerous septa and the slight constriction of the cells between them quite distinctly.

This species seems never to become ramose, or even elongated except by encrusting some elongated object; by this habit and the unusual minuteness of the cells it may be distinguished from all other species.

Position and locality.—Devonian strata, near Muscatine, Iowa.

Genus **MONTICULIPORA**, D'Orbigny.**Monticulipora monticula** (n. s.).

Polypary usually consisting of small expanded masses, flat or concave below, convex above, thin at the edges, but the middle portion being thickened and considerably elevated; the upper surface having the papillary elevations peculiar to the genus and the under side sometimes having the appearance of being provided with an epitheca; cells of ordinary size, not radiating from a common centre but extending upward more or less perpendicularly with the plane of the base of the polypary.

The uniformity of habit of this species is its most distinguishing characteristic, and by which it may be readily recognized.

Position and locality.—Devonian strata, Iowa City, Iowa.

Genus **LOPHOPHYLLUM**, Edward et Hairne.**Lophophyllum expansum** (n. s.).

Corallum broadly conical, slightly curved, transverse section subcircular, calyx broad, not deep; rays numerous; septal fos-

sette not very distinct, situated at the convex side of the corallum ; columella prominent, laterally flattened so as to form a more or less sharp edge along its crest.

This species is proportionally much broader than usual, and when its interior structure is better known it may possibly be found to belong to the genus *Axophyllum*, but its external characters seem to warrant its reference to *Lophophyllum*.

Height of corallum and diameter of calyx each about two centimetres.

Position and locality.—Keokuk limestone (subcarboniferous), Henry County, Iowa.

ECHINODERMATA.

Genus **STROBILOCYSTITES** (n. g.).

Body ovoid or subspherical ; pectinated apertures forming three inclosed rhombic areas, one on each of the four parts of the body except the posterior part ; those of the two lateral parts situated above the middle of the body, and that of the anterior part below the middle ; ovarian aperture distinct, situated a little below the summit of the posterior side ; the four principal arm-grooves distinct, radiating from the summit as far as, or below, the middle ; small secondary arm-grooves extending obliquely downward from each side of the principal grooves, their length and distribution being made irregular by the presence and unsymmetrical position of the pectinated rhombs.

The principal plates are probably similar to those of *Callocystites*, but our examples do not show their shapes distinctly ; the secondary plates bordering and near the arm-grooves numerous and small.

Two specimens only of the species representing this genus have been discovered. One of these is very imperfect, and the other, although in a comparatively good state of preservation, does not show clearly the arrangement of all the plates. Enough, however, is shown of its structure to separate it from any described genus. It is also, so far as I am aware, the first cystidian ever found in Devonian rocks, the family having hitherto been regarded as characteristic of Silurian strata.

Strobilocystites **Calvini** (n. s.).

Body subovoid in form ; principal arm-grooves distinct, extending nearly to the base of the body ; the two antero-lateral and the

two postero-lateral grooves respectively coalescing before they reach the summit, across which continuous connection is made with all of them by a short groove; the front, and the two lateral parts, of nearly equal width; the posterior part narrower than either of the others, and bearing the ovarian orifice a little below its summit; the pectinated rhombs divided longitudinally by a distinct suture; the rhomb of the left side situated about one-third the height of the body below its summit, the direction of the long diameter being nearly at right angles with the axis of the body, and its length a little more than two-thirds the full width of the side: the rhomb of the right side situated at about the same distance below the summit as that of the left, but its long diameter is nearly vertical and twice as great as its transverse diameter; the rhomb of the front side situated near the base, its long diameter being obliquely transverse with the axis of the body, and its shape and size being similar to that of the left side; secondary plates small, tumid, placed in alternating series along each side of the arm-grooves, and outside of these first rows there are other similar pieces, some of which alternate with the first, but others are more irregularly distributed, all giving the surface a papillose appearance.

Column and appendages unknown.

Height of body eighteen millimetres; transverse diameter thirteen millimetres.

Specific name given in honor of its discoverer, Professor Samuel Calvin of the Iowa State University.

Position and locality.—Devonian strata, Iowa City, Iowa.

Genus **MEGISTOCRINUS**, Owen.

Megistocrinus Farnsworthi (n. s.).

Body below the arms moderately deep, its sides slightly expanded, but broadly convex below, and its immediate base a little concave; dome broadly convex, composed of numerous small tumid pieces, and apparently having a short, sub-central proboscis; arms sixteen, four to each of the postero-lateral, and to the anterior rays, and two to each of the antero-lateral rays; the basal series of pieces moderately large, slightly concave, more than half its diameter covered by the last joint of the column; the anal series of pieces occupying a comparatively broad space; the plates generally, having the proportions, shapes, and arrangement common to the genus; the central portion of all the plates is prominent, or

they have their borders so depressed as to produce the appearance of central prominence to the plates, and of broad sutures between them.

Height of calyx fourteen millimetres; diameter of body at the base of the arms, twenty-seven millimetres.

This species differs from *M. latus* Hall, from rocks of the same age in Iowa, by its smaller size, its tumid plates and depressed sutures, and in having only sixteen arms instead of twenty, as in that species.

Specific name given in honor of Professor P. J. Farnsworth, of the Iowa State University, who first discovered it.

Position and locality.—Devonian strata, Iowa City, Iowa.

MOLLUSCA.

BRACHIOPODA.

Genus **STRICKLANDINIA**, Billings.

Stricklandinia castellana (n. s.).

Shell moderately large, sublenticular, broadly subovate or sub-circular in marginal outline; valves almost equally convex.

Dorsal valve usually showing a slightly elevated, indistinctly defined mesial fold, which is quite narrow upon the posterior portion of the valve, but widens toward the front, of adult shells; umbo broadly convex; beak not prominent.

Ventral valve usually having a slight flattening of the antero-median portion, corresponding with the indistinct fold of the other valve; umbo broadly convex; beak not prominent, projecting backward little if any beyond the beak of the other valve; area distinct, narrow, its length less than half the greatest width of the shell.

Surface of both valves marked by numerous, rather coarse, radiating, more or less recurving, angular or sharply rounded plications, of unequal size and separated by spaces of unequal width.

Length and breadth of the largest example discovered, each forty-two millimetres; thickness, both valves together, twenty-one millimetres.

Position and locality.—Niagara limestone, Upper silurian, near Castle Grove, Jones County, Iowa.

CONCHIFERA.Genus **PARACYCLAS**, Hall.**Paracyclas Sabini** (n. s.).

Shell sublenticular; subcircular or subovate in marginal outline; beaks small, approximate, pointing forward, elevated little if any above that portion of the dorsal margin which lies behind them, but considerably above that portion in front of them; dorsal, posterior and basal margins forming nearly one uniform curve, but the prominent front, which is the narrowest and thinnest part of the shell, has its margin more abruptly rounded; ligament small, slightly prominent, but it is made apparently more prominent by two distinct, moderately deep narrow grooves, one on each side of it, which extend from between the beaks backward, and become obsolete upon the postero-dorsal region; valves broadly and nearly uniformly convex, the surface being marked by ordinary lines and slight undulations of growth.

Length of the most perfect example discovered, seventeen millimetres; height fifteen millimetres; thickness eight millimetres. The proportionate thickness of fully adult shells is usually much greater than that here given.

The specific name is given in honor of Mr. A. H. Sabin, of Mason City, Iowa.

Position and locality.—Devonian strata at Rockford, Floyd County, Iowa.

Genus **ALLORISMA**, King.**Allorisma Marionensis** (n. s.).

Shell small, elongate, ventricose anteriorly, and laterally flattened behind, where it is usually a little broader from base to dorsal margin than the anterior portion is; umbones prominent, elevated; beaks incurved, placed far forward; dorsal margin straight or slightly concave; postero-dorsal margin sloping backward to the posterior extremity, the greatest prominence of which is at, or a little below, midheight of the adult shell; base broadly rounded or straightened about midway where the slight umbonal flattening of each valve meets it.

Surface marked by the ordinary concentric lines and undulations of growth.

Length twenty-eight millimetres; height thirteen millimetres.

A few examples have been obtained that are about one-third larger than that of which the dimensions are here given, but it is an unusually small species.

Position and locality.—St. Louis limestone (subcarboniferous) of Marion and Mahaska Counties, Iowa, where it is sometimes found quite plentiful, in both the calcareous and magnesian layers of that formation.

GASTEROPODA.

Genus **BELLEROPHON**, Montfort.

Bellerophon Bowmani (n. s.).

Shell small, somewhat flattened vertically; umbilici small, and sometimes nearly or quite closed by the overlapping of the callus-like, slightly reflexed expansion of the postero-lateral portions of the margin of the aperture; volutions broadly convex both laterally and longitudinally; aperture comparatively large, but the external margin is not reflexed or flattened by its expansion; mesial band distinct, slightly raised; mesial notch not deep.

Surface marked by numerous concentric folds which are crossed by revolving raised lines of nearly the same size, giving the surface a neatly cancellated appearance.

Length eight millimetres; breadth of aperture the same; height, lying with its aperture downward upon the table, five millimetres.

Specific name in honor of Mr. S. C. Bowman, of Andalusia, Ill., who first discovered it at that place.

Position and locality.—Devonian strata, New Buffalo, Iowa, and Andalusia, Illinois.

Genus **EUOMPHALUS**, Sowerby.

Euomphalus Springvalensis (n. s.).

Shell rather large; spine much extended for a species of this genus; volutions six or seven, gradually increasing in size from the apex to the aperture; flattened upon the distal or upper side, regularly and continuously rounded upon the outer and proximal sides, and into the deep umbilicus; aperture nearly circular, its outline being modified only by the slight flattening of the distal side and the short contact of the preceding volution.

Length about five and a half centimetres; breadth of last volu-

tion seven centimetres; diameter of aperture twenty-three millimetres.

Position and locality.—Kinderhook formation (Subcarboniferous), Springvale, Humboldt County, Iowa.

PTEROPODA.

Genus **CONULARIA**, Miller.

Conularia Molaris (n. s.).

Shell having the ordinary four-sided conical shape, each side having an indistinct very faintly impressed longitudinal line, not placed in the middle of the side but nearer to one angle than the other, each angle having the adjacent lines at equal distances, these distances being of course greater from two of the angles than from the other two. Surface marked by fine, sharply raised, minutely erenulated, transverse lines, which present the convexity of a broad curve toward the front as they cross the sides, but bend very slightly forward at the angles, the grooves of which most of them cross continuously to the adjacent side. These raised lines are at slightly irregular distances apart, the distance being usually a little greater than their own width. A cast of a portion of the interior of the shell shows that the inner surface has also markedly slightly raised lines corresponding with those upon the outer surface, and opposite, instead of alternating with them. In the case of mending a fracture of the shell while the mollusk was living, the lines appear to have never been reproduced.

Position and locality.—Devonian strata, Troy Mills, Linn County, Iowa.

CEPHALOPODA.

Genus **CYRTOCERAS**, Goldfuss.

Cyrtoceras dictyum (n. s.).

Shell not large, curvature broad; section elliptical, the longer diameter of the ellipse being transverse.

Surface marked by fourteen narrow, longitudinal raised ribs, placed at unequal but symmetrical distances from each other, thus: One at each lateral side, a little exterior to the transverse diameter, where it produces a more or less distinct angularity; six between these on the inner or incurved surface, all nearly equal

distances from each other; and six upon the outer surface. The spaces between these last-named ribs are nearly equal except those between the first two ribs on each side of the central space, which are narrower than any of the others. Crossing these ribs are distinct lines and sharp undulations of growth, which bend backward more or less distinctly between all the ribs, but much more so between the two middle ribs upon the outer surface.

The inflexion is so great at the margin of the aperture as to produce a distinct notch there, resembling that of some species of *Bellerophon*.

The only portion of this species yet discovered is nearly or quite the whole of the outer chamber; none of the septa being shown, but the surface markings are so peculiar that the species may be readily identified by these alone.

Transverse diameter of the aperture, about four centimeters; the shorter diameter, about three centimeters.

Position and locality.—Devonian strata, Troy Mills, Linn County, Iowa.

ARTICULATA.

VERMES.

Genus **TENTACULITES**, Schlotheim.

Tentaculites Hoyti (n. s.).

Shell moderately large; marked by strong, sharply elevated annulations, separated by spaces considerably greater than their own width; spaces and annulations regularly decreasing in width towards the apex, where they are both minute, and both more nearly equal than at its larger end.

Average length, about fifteen millimeters; diameter of aperture, nearly two millimeters. Specific name given in honor of Mr. B. F. Hoyt.

Position and locality.—Devonian strata, Iowa City, Iowa.